

Application No.: 09/998935

Case No.: 56196US011

REMARKS

Claims 1 and 5-35 are pending. Claim 4 has been canceled. Claims 16-33 have been withdrawn from consideration. Claims 1, 8 and 15 are amended. Claims 34 and 35 have been added.

Claim 8 was objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Claim 8 has been amended to remove limitations which contain more carbon atoms in the alkyl group than claim 1 allows. Support for the amendment can be found in original claim 8.

Applicants respectfully submit that the objection to claim 8 has been overcome and should be withdrawn.

§ 103 Rejections

Claims 1, 4-9, and 11-15 stand rejected under 35 USC § 103(a) as being unpatentable over Yau et al. in view of Everaerts et al.

Applicants have amended claims 1 and 15. Claims 1 and 15 now recite a pressure sensitive adhesive composition comprising the reaction product of a copolymer and a bis-amide crosslinking agent. The copolymer comprises the reaction product of a (meth)acrylate ester of a non-tertiary alcohol in which the alkyl group contains between 1 and 8 carbon atoms, inclusive, and a carboxylic acid-functional, ethylenically unsaturated co-monomer. The relative amounts of said co-monomer and said crosslinking agent being selected such that the ratio of the number of equivalents of amide groups to the number of equivalents of carboxylic acid groups is at least about 0.5. (Support for the amendments can be found in original claim 4, and page 7, lines 14-19.)

In paragraph 7 of the Office Action dated December 16, 2002, the Patent Office asserted that Yau et al. disclose a PSA tape made from an acrylate ester, a carboxylic acid functional monomer, and a crosslinking agent. The Patent Office admits that Yau et al. fail to teach the use of the exact crosslinker that Applicants claim in claims 1 and 15. The Patent Office asserts that it would have been obvious to a person of ordinary skill in the art to use the crosslinking agent in Everaerts et al. in the pressure sensitive adhesive of Yau et al.

Everaerts et al. teach that the amount of crosslinker varies from about 0.05% to about 1% by weight of the total composition. (See, col. 6, lines 63-65.) Everaerts et al. use a bis-amide

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crosslinker in Examples 5-10. In each of these examples, the amount of the carboxylic acid functional monomer (i.e., acrylic acid) is 2% by weight. The maximum amount of bis-amide crosslinking agent is 1% by weight. (See, Example 10.)

The ratio of the number of equivalents of amide groups to the number of equivalents of carboxylic acid groups is determined as follows. The weight of each component (co-monomer and crosslinking agent) in the composition is divided by its theoretical equivalent weight to obtain the number of equivalents for each component. The ratio of equivalents of amide groups to equivalents of acid groups is then calculated as equivalents of (amide groups) divided by equivalents (acid groups). (See, page 2, line 26 – page 3, line 3.)

Thus, for Everaerts et al., assuming 100 total grams of adhesive, there are 2 grams of acrylic acid (2% by weight) and 1 gram of bis-amide crosslinker (1% by weight). There is one carboxylic acid group per acrylic acid monomer, thus the theoretical equivalent weight of an acid group is equal to the molecular weight of acrylic acid, i.e., 72 gm/mole. There are two amide groups per bis-amide unit, thus the equivalent weight of an amide group is one-half the molecular weight of the bis-amide i.e., $244/2 = 122$ gm/mole.

The number of equivalents of acid is then $2/72 = 0.0278$. The number of equivalents of amide is $1/122 = 0.0082$. Thus, the ratio of equivalents of amide to equivalents of acid is $0.0082/0.0278 = 0.295$. Therefore, Everaerts et al. fail or to teach or suggest a ratio of equivalent of amide to equivalents of acid of at least about 0.5.

In Example 1, Yau et al. teach an adhesive composition containing 5.4 gm of acrylic acid, with a total weight, excluding crosslinker, of 243.09 gm. Yau et al. teach that, when used, the crosslinker is added at a level of up to about 1%, preferably up to about 0.5%, of the total polymerizable composition. (See, col. 8, lines 20-23.) Assuming that Yau et al. used the crosslinker of Everaerts et al. at the maximum level taught by either reference (i.e. 1% by weight) in the composition of Example 1, this would be 2.43 gm (i.e., 0.01×243.09 gm) of bis-amide.

The number of equivalents of acid is then $5.4/72 = 0.075$. The number of equivalents of amide is $2.43/122 = 0.0199$. Thus, the ratio of equivalents of amide to equivalents of acid is $0.0199/0.075 = 0.265$. Therefore, Yau et al. fail to teach or suggest a ratio of equivalents of amide to equivalents of acid of at least about 0.5.

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In order to make a *prima facie* case for obviousness, the prior art references must teach or suggest all of the claim limitations. As discussed above, Yau et al. in view of Everaerts et al., fail to teach or suggest all of the limitations of claims 1 and 15, as amended. For at least this reason, claims 1 and 15 are patentable over Yau et al. in view of Everaerts et al.

Claims 4-9, and 11-14 each depend from claim 1. Claim 1 is patentable for at least the reason described above, thus claims 4-9 and 11-14 are likewise patentable. The rejection of claims 1, 4-9, and 11-15 under 35 USC § 103(a) as being unpatentable over Yau et al. in view of Everaerts et al. has been overcome and should be withdrawn.

Claim 10 stands rejected under 35 USC § 103(a) as being unpatentable over Yau et al. in view of Everaerts et al. as applied to claim 1 above, and further in view of Peloquin et al. Claim 10 also stands rejected under 35 USC § 103(a) as being unpatentable over Yau et al. in view of Everaerts et al. as applied to claim 1 above, and further in view of the abstracts of both JP-02178379A and JP-03281585A ("Japanese Abstracts"). These rejections are respectfully traversed. While not conceding proper motivation exist to modify Yau et al. and Everaerts et al. with Peloquin or the Japanese abstracts, even if such a modification is proper, the modification fails to teach or suggest all of the claim limitations. Claim 10 depends directly from claim 1. As stated above, claim 1 has been amended to recite a ratio of equivalents of amide groups to equivalents of acid groups of at least 0.5. Yau et al. and Everaerts et al. fail to teach or suggest such adhesive as is claimed in the amended claim. The combination with Peloquin and the Japanese Abstracts with respect to the crosslinkers used fails to remedy this deficiency. (See, e.g., Peloquin at page 8, line 15, teaching that no more than 0.5% by weight of chemical crosslinker is required; and JP-02178379A, teaching that a suitable amount of crosslinker is 0.001-1 % by weight.)

The rejection of claim 10 under 35 USC § 103(a) as being unpatentable over Yau et al. in view of Everaerts et al. and further in view of Peloquin et al. has been overcome and should be withdrawn.

The rejection of claim 10 under 35 USC § 103(a) as being unpatentable over Yau et al. in view of Everaerts et al., and further in view of the abstracts of both JP-02178379A and JP-03281585A has been overcome and should be withdrawn.

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Claims 34 and 35 have been added. Support for the new claims can be found in original claims 2 and 3. Claims 34 and 35 each depend from claim 1. Claim 1 is patentable for at least the reasons stated above, thus claims 34 and 35 are likewise patentable.

In view of the above, it is submitted that the application is in condition for allowance. Reconsideration of the application is requested.

Allowance of claims 1, 5-15, and 34-35, as amended, at an early date is solicited.

Respectfully submitted,

01 July, 2003
Date

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SAB/TMS/spg
56196US011 AMEND 1

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Version with markings to show amendments made:

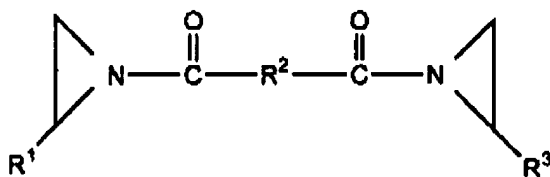
1. (Three Times Amended) An adhesive article comprising:

- (1) a backing; and
- (2) a pressure sensitive adhesive composition on said backing,

said composition **comprising** [consisting essentially of] the reaction product of:

(A) a copolymer comprising the reaction product of (a) a (meth)acrylate ester of a non-tertiary alcohol in which the alkyl group contains between 1 and 8 carbon atoms, inclusive, and whose homopolymer has a glass transition temperature no greater than about 0°C; and (b) a carboxylic acid-functional, ethylenically unsaturated co-monomer; and

(B) a bis-amide crosslinking agent having the formula:



where R¹ and R³ independently, are selected from the group consisting of H and C_nH_{2n+1} where n is an integer ranging from 1 to 5, and R² is a divalent radical selected from the group consisting of benzeno (-C₆H₄-), substituted benzeno, triazine, C_mH_{2m} where m is an integer ranging from 1 to 10, and combinations thereof,

the relative amounts of said co-monomer and said crosslinking agent being selected such that (i) the ratio of the number of equivalents of amide groups to the number of equivalents of carboxylic acid groups is at least about 0.5 [0.1],

wherein the pressure sensitive adhesive composition comprises no greater than 10% by weight of a tackifier and no greater than 2% by weight of a plasticizer[, wherein said composition, when applied to a copper-containing or glass substrate at a thickness of 0.0008 inch and exposed to a temperature of 180°C for 30 minutes, is cleanly removable following heat exposure].

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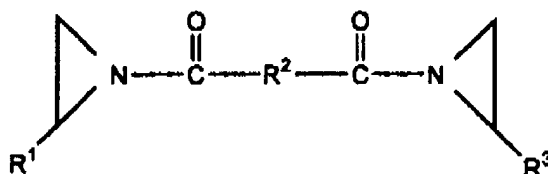
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8. (Amended) An adhesive article according to claim 1 wherein said (meth)acrylate ester is selected from the group consisting of butyl acrylate, 2-methylbutyl acrylate, 2-ethyl hexyl acrylate, isooctyl acrylate, [lauryl acrylate, n-decyl acrylate,] 4-methyl-2-pentyl acrylate, isoamyl acrylate, sec-butyl acrylate, [isononyl acrylate,] and combinations thereof.

15. (Three Times Amended) A pressure sensitive adhesive composition **comprising** [consisting essentially of] the reaction product of:

(A) a copolymer comprising the reaction product of (a) a (meth)acrylate ester of a non-tertiary alcohol in which the alkyl group contains between 1 and 8 carbon atoms, inclusive, and whose homopolymer has a glass transition temperature no greater than about 0°C; and (b) a carboxylic acid-functional, ethylenically unsaturated co-monomer; and

(B) a bis-amide crosslinking agent having the formula:



where R^1 and R^3 independently, are selected from the group consisting of H and $\text{C}_n\text{H}_{2n+1}$ where n is an integer ranging from 1 to 5, and R^2 is a divalent radical selected from the group consisting of benzeno ($-\text{C}_6\text{H}_4-$), substituted benzeno, triazine, C_mH_{2m} where m is an integer ranging from 1 to 10, and combinations thereof,

the relative amounts of said co-monomer and said crosslinking agent being selected such that (i) the ratio of the number of equivalents of amide groups to the number of equivalents of carboxylic acid groups is at least about 0.5 [0.1],

wherein the pressure sensitive adhesive composition comprises no greater than 10% by weight of a tackifier and no greater than 2% by weight of a plasticizer[,

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wherein said composition, when applied to a copper-containing or glass substrate at a thickness of 0.0008 inch and exposed to a temperature of 180°C for 30 minutes, is cleanly removable following heat exposure].